Targeted Social Media Advertising and Household Solar Power Adoption among Residents of Obio/Akpor Local Government Area in Rivers State

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Abstract

This paper examines targeted social media advertising and household solar power adoption among residents of Obio/Akpo Local Government Area in Rivers State. The theory of planned Behaviour was use and the theoretical foundation to the study. a survey design was adopted with a population of 464,789 and a sample size of 368 determined using Taro Yamane. The purposive sampling technique was adopted for the study and the data were collected using a structure questionnaire whose reliability was confirmed through Cronbach Alpha and validity established through expert review. Data were analysed using weighted mean score. Findings revealed that targeted social media advertising significantly increased residents' exposure and awareness of solar power and positively influenced their attitudes. However, the effect on actual adoption was limited. The study recommended that there should be improvement of informational content in advertisements and the provision of financial incentives to encourage adoption. It was concluded that targeted social media advertising plays a significant role in shaping awareness and attitudes but does not directly translate into adoption without supportive measures.

Keywords: Targeted, Social Media, Advertising, Household, Solar Power,

Introduction

The growing global concern over environmental sustainability and energy security has intensified the search for alternative and renewable energy sources. Solar energy, as a clean and renewable form of energy, has gained considerable attention in both developed and developing economies. In Nigeria, where electricity supply remains inconsistent and inadequate, households increasingly explore alternative energy solutions such as solar power systems. The adoption of solar energy at the household level is influenced by multiple factors, including awareness, affordability, accessibility, and exposure to information. Renewable energy is energy from natural and repetitive currents that occur in the local environment (Twidell & Weir, 2015). Comparison of renewable energy sources (green) with conventional energy (brown) shows that the lifetime of renewable energy supply has been infinite and their cost is free, although the cost of equipment capital per kw capacity has been expensive (about 1000 $)

According to Ankur, Sanjeev, and Kamal (2025), the increasing global demand for sustainable energy solutions has led to positioning of solar energy at the heart of the transition to a lowcarbon future. Adoption of solar energy has registered tremendous growth during the last ten years due to improvements in PV technology, lowering costs, and favourable government policies. However, despite these environmental and economic benefits, wide-scale adoption of solar energy remains a challenge: consumers lack knowledge about it, there is constraints on the available finances, and the marketing approach has an effect on consumer adoption behaviour.

Solar power presents a viable alternative, yet adoption rates remain low despite abundant sunlight. Globally, targeted social media advertising has proven effective in shaping consumer behavior towards green energy (Li et al., 2021). Platforms like Facebook, Instagram, and WhatsApp enable geo-demographic targeting, allowing messages tailored to income levels, energy needs, and environmental attitudes. In Nigeria, social media penetration exceeds 40% in urban areas, with Port Harcourt residents actively engaged online. Preliminary evidence suggests that awareness campaigns using targeted ads increase solar

home system inquiries, but the direct link to actual household adoption rates in Obio/Akpo remains underexplored.

Targeted advertising becomes particularly significant in the promotion of solar power technologies. Households that are consistently exposed to persuasive, informative, and customized messages about solar energy may develop favorable attitudes and intentions toward adoption. Social media platforms such as Tiktok, Facebook, Instagram, and X provide avenues for solar energy companies to reach potential consumers within specific geographical locations. Understanding how targeted social media advertising influences household solar power adoption is essential for both policymakers and marketers. It provides insights into how communication strategies can be optimized to promote sustainable energy practices. This study therefore examines the relationship between targeted social media advertising and household solar power adoption rates among residents of Obio/Akpo Local Government Area.

Statement of Problem

Despite the series of adverts, and verbal persuasion on the importance of green energy transition from over dependence on fossil fuel, household solar adoption among residents of Obio/Akpo LGA remains low. Many residents express ignorance about solar financing options, maintenance, and long-term savings as some feel that the cost of installation is higher than their income level. More importantly, social media adverts by solar by companies and dealers could have been generic, and failing to resonate with specific household segments such as low-income tenants, self-employed workers, or homeowners. Consequently, advertising budgets yield low conversion rates. The main problem is a lack of empirical evidence on which targeting parameters most effectively drive adoption. Without this knowledge, public relations campaigns and private sector advertisers cannot optimize their digital strategies to accelerate clean energy uptake, perpetuating energy poverty and environmental degradation from generator fumes.

Aim and Objectives of the Study

This study aims to examine the influence of targeted social media advertising on household solar power adoption rates among residents of Obio/Akpo Local Government Area. Specifically, the objectives are to:

1. To determine the level of exposure of residents to targeted social media advertising on solar power.
2. To examine the influence of targeted social media advertising on residents' awareness of solar power.
3. To assess the effect of targeted social media advertising on residents' attitudes toward solar power adoption.

Research Questions

1. What is the level of exposure of residents to targeted social media advertising on solar power?
2. How does targeted social media advertising influence residents' awareness of solar power?
3. What effect does target social media advertising have on residents' attitudes toward solar power adoption?

Literature Review

Targeted Social Media Advertising

Targeted social media advertising refers to a strategic form of digital marketing in which advertisers deliver customized messages to specific audiences based on identifiable characteristics such as age, location, interests, and online behaviour. The development of social media platforms has transformed advertising from a broad mass communication approach into a more precise and data driven process. These platforms utilize user data and algorithmic systems to match advertisements with individuals who are more likely to respond positively, thereby increasing the effectiveness of communication (Abbasi, 2025). This targeted approach enhances message relevance and improves the efficiency of advertising campaigns.

Targeted advertising operates through audience segmentation and behavioural tracking. Advertisers analyse users' online activities and preferences in order to design messages that align with their needs and expectations. Tong (2025) explains

that this form of advertising improves marketing outcomes by ensuring that promotional content reaches the most relevant audience, thereby increasing engagement and response rates. In the same vein, Bashar et al. (2024) argue that targeted social media advertising enhances interaction between brands and consumers by delivering content that resonates with users' personal experiences and interests.

The advancement of technology has further strengthened the effectiveness of targeted social media advertising. The integration of artificial intelligence and machine learning has enabled real time personalization and predictive analysis of consumer behaviour. Uwayezu et al. (2026) observe that AI driven advertising systems are capable of analysing large volumes of user data to optimize message delivery and improve campaign performance. These technological developments allow advertisers to monitor user responses and adjust their strategies dynamically, thereby increasing the likelihood of achieving desired outcomes.

Concept of Household Solar Power Adoption

Household solar power adoption refers to the process through which individuals or families decide to install and use solar photovoltaic systems as an alternative source of electricity in their homes. This concept is closely linked to the global shift toward renewable energy and sustainable development. The increasing demand for reliable and environmentally friendly energy has made solar technology a viable option for households, particularly in regions with unstable electricity supply. However, adoption is not solely a technical decision but also a behavioural process influenced by economic, social, and informational factors (Shakeel et al., 2023).

Economic factors such as installation cost, maintenance expenses, and expected financial savings play a central role in shaping adoption decisions. In addition, social and environmental considerations, including awareness of climate change and peer influence, also contribute to the adoption process. Li et al. (2024) argue that individuals are more likely to adopt solar technology when they perceive clear benefits and have positive attitudes toward renewable energy. This indicates that both rational evaluation and subjective perception are important in understanding adoption behaviour.

Perception based models have further explained how households evaluate solar power technologies. Individuals weigh perceived benefits of using solar energy against perceived risks before making adoption decisions. Benefits may include cost savings, energy independence, and environmental protection, while risks may involve financial uncertainty and technical challenges. Karasmanaki et al. (2025) note that when perceived benefits outweigh the risks, the likelihood of adoption increases significantly. This highlights the importance of effective communication in shaping how households interpret information about solar energy.

Renewable Energy

The high energy demands have brought up the need for at least ten terawatts of carbon free power by the mid-century to the world (Armstrong, 2003). In other words, although the energy intensities have declined, the need will increase to about two-fold by the middle of 21st century is undeniable (Apajalahti et al., 2015.). This increase in energy demands (up to about 2-3% per year) is generally due to the high population and economy growth (Lund, 2011.). Additionally, the rapid increasing of renewable energies attention is happening and the knowledge about their environmental effects are very limited (Armstrong, 2003). As a result, the renewable energies (e.g. solar or wind energies) will play a vital role in the future because it is well accepted by environmental friendly industries.

Renewable energy is useful energy that is collected from renewable resources, which are naturally replenished on a human timescale, including carbon neutral sources like Sunlight, wind, rain, tides, waves and geothermal heat. Furthermore, the fuel-based sources are not less reliable from environmental point of but also will last soon. The statistical studies show that the energy demand will increase about 40% between2009 and 2035(IEA, 2011). This increase will get contributions from solar energy, hydropower, biomass and waste, and 'other' renewable energies. These sources are predicted to increase by 70%, 55% and 600%, respectively (IEA, 2011). As an expanding source wind power has grown tremendously. An extraordinary growth of about 238GW happened to wind power growth between 2010 and 2011. Additionally, solar photovoltaic (PV) technology demonstrated a growth rate of 74%, which was the highest rate among all energy sources in 2011.

Solar energy is radiant light and heat from the Sun that is harnessed using a range of ever evolving technologies such as solar heating, photovoltaic, solar thermal energy, solar architecture, molten salt power plants and artificial photosynthesis. It is an essential source of renewable energy, and its technologies are broadly characterized as either passive solar or active solar depending on how they capture and distribute solar energy or convert it into solar power. Active solar techniques include the use of photovoltaic systems, concentrated solar power, and solar water heating to harness the energy. Passive solar techniques include orienting a building to the Sun, selecting materials with favourable thermal mass or light dispersing properties, and designing spaces that naturally circulate air. The large magnitude of solar energy available makes it a highly appealing source of electricity. The United Nations Development Program in its 2000 World Energy Assessment found that the annual potential of solar energy was 1,575–49,837 exajoules (EJ). This is several times larger than the total world energy consumption, which was 559.8 EJ in 2012. In 2011, the International Energy Agency said that "the development of affordable, inexhaustible and clean solar energy technologies will have huge longer-term benefits. It will increase energy security through reliance on an indigenous, inexhaustible, and mostly import independent resource, enhance sustainability, reduce pollution, lower the costs of mitigating global warming, and keep fossil fuel prices lower than otherwise. These advantages are global. Hence the additional costs of the incentives for early deployment should be considered learning investments; they must be wisely spent and need to be widely shared”

Consumer Awareness and Solar Energy Adoption

According to Ankur, Sanjeev, and Kamal (2025), consumer awareness develops the behaviour or pattern of adopting solar energy. Knowledge, perception, and availability of information reinforce decision-making about a technology. Findings are that there will be high adoption with increased awareness level, while lack of information is the most significant barrier to solar uptake. Consumer trust in the technology, social influence, and targeted knowledge communication campaigns impact willing-ness to invest in solar solutions.

In a work carried out by Ajay et al (2024) titled Review on Intelligent Social Networking Algorithms and Their Effects on Predicting the Adequacy of

Renewable Energy Sources via Social Media found that With millions of people tuning into social media platforms, tech giants have turned their users into datacenters. Almost no attention is given to how the underlying algorithms of software and applications on users' screens try to manipulate their thoughts and actions. Since people spend so much of their time glued to their screens, it is crucial to analyze social media algorithms to understand their impact on one's life. Some people even use these platforms to scale businesses by increasing user demands. This article aims at understanding the overview of different social networking algorithms and learn the numerous techniques used to gain profits. It also provides a basis on how marketers and businesses can utilize algorithmic properties and develop networking models for their products to reach more targeted clients. It examines the algorithms to understand the users' consumption for the benefit of influencers and sellers. This work also examines the ways in which renewable energy (RE) sources can be forecasted using these techniques.

In another study by Uwayezu, et al. (2026) In today's digital environment, social media platforms offer many free services that have become integral to users' daily lives. However, there are serious privacy concerns associated with this convenience, especially given how artificial intelligence (AI) is being incorporated into user data management. This study explores the social and ethical dimensions of the trade-off between the benefits of free platform use and the privacy concerns emerging from AI-powered targeted advertising. Users are generally more concerned about how AI algorithms use their data for advertising and personalization than they are about the collection of their data. AI technologies have significant issues with surveillance, behavioural profiling, and data commodification, even though they improve user experience through personalization. The study presented is thorough literature-based research that explores user knowledge gaps and perceptions of risk and awareness of AI-based features in the use of social media. It has been discovered that there has been an increase in attention to data collection, but a lack of knowledge about the AI mechanisms, thus leading to an overall problem of the so-called privacy paradox, in which continued use is promoted despite the lack of trust in it. The study suggests the proposed framework model of the study to guide the evaluation of the user attitudes and intentions. These lessons are meant to help social media companies; policy initiators and digital rights activists understand how to strike a

balance between technological advances and strong privacy safeguards. Study phases that will be applied later will consist of a Delphi-based qualitative analysis of the internet privacy experts.

Theoretical Framework

Theory of Planned Behaviour

The Theory of Planned Behavior (TPB) was developed by Icek Ajzen as an extension of the earlier Theory of Reasoned Action. The theory explains how human behaviour is guided by intention, and how this intention is shaped by three core determinants: attitude toward the behaviour, subjective norms, and perceived behavioural control. According to this framework, individuals are more likely to perform a behaviour when they have a favourable evaluation of it, perceive social pressure to engage in it, and believe they have the ability and resources to carry it out. The theory therefore provides a structured explanation of how beliefs and perceptions translate into actual behaviour of an individual.

Attitude toward behaviour is the individual's positive or negative evaluation of performing a particular action. In the context of solar power adoption, attitude involves how residents perceive solar energy in terms of its usefulness, reliability, and benefits. When individuals are exposed to persuasive communication, such as targeted social media advertising, their beliefs about solar energy can be shaped in a favourable direction. The position of this theory is in agreement with the result of this study which indicated that exposure to targeted advertising enhances positive perceptions and makes solar power appear attractive and beneficial. Thus, advertising serves as a stimulus that influences attitudinal formation within the TPB framework.

Methodology

The research adopted a survey design which is considered appropriate for examining relationships between communication variables and behavioural outcomes within a defined population. The choice of survey design is informed by the nature of the variables under investigation. Targeted social media advertising represents the independent variable, while household solar power adoption constitutes the dependent variable. The survey approach allows for the

measurement of respondents' exposure to advertising, their awareness levels, attitudes, and actual adoption behaviour in a structured and quantifiable manner.

Population

The target population comprises all household heads or primary decision-makers for energy purchases residing in Obio/Akpo LGA. According to the National Population Commission (2022), Obio/Akpo LGA has an estimated population of 464,789 residents. With an average household size of 4.5 persons (Nigerian Bureau of Statistics), the number of households = 464,789 . Thus, the study population (N) = 464,789 household heads**.**

Sample Size

n = N / (1 + N(e)^2)
Where:
n = sample size
N = population size (464,789)
e = level of precision (0.05)
n = 464,789 / (1 + 464,789(0.05)^2)
n = 464,789 / (1 + 464,789(0.0025))
n = 464,789 / (1 + 1,161.97)
n = 464,789 / 1,162.97 =399
Therefore, the sample size for the study is 399 respondents.

Sampling Technique

Purposive sampling was used to select the 399 respondents. The respondents were selected based on the criteria that they must be a resident of Obio/Akpo LGA for at least 1 year, must own or have regular access to a smartphone with at least one active social media account (Facebook, Instagram, or TikTok) and must be the primary decision-maker on household energy purchases. The researchers identified 10 major communities within Obio/Akpo (e.g., Rumuokoro, Rumuodomaya, Eliozu, Rumuigbo, etc.). In each community, 40 respondents (399/10 ≈ 40) meeting the criteria was purposively selected based on their exposure and usage of social media.

A structured questionnaire titled *Targeted Social Media Advertising and Solar Adoption Survey (TSMASAS)* will be designed in two sections: Section A: Demographic data, and Section B**:** Exposure to targeted solar ads, Adoption status and Perceived influence of advertising targeting which was measured on a 4-point Likert scale of, X, Strongly Agree=4, Agree=3, Disagree =2, and Strongly Disagree=1).

The validity of the instrument was reviewed by two experts, one communication scholar, and a renewable energy researcher. The reliability of the instrument was tested using the pilot-tested on 30 household heads in a neighboring LGA (Ikwerre) with similar characteristics. Cronbach's alpha coefficient was computed. A threshold of $\alpha \geq 0.70$ indicates acceptable reliability. Based on similar studies, expected $\alpha \approx 0.82$ for the targeting influence scale.

Data for the study are collected through direct administration of the questionnaire to selected respondents. The researcher employs a combination of physical distribution and online survey methods to ensure adequate coverage and response rate. Data collected are analyzed using descriptive statistics, particularly the weighted mean score. The Likert scale responses are assigned numerical values, and the mean score is calculated for each item. A decision rule is established such that a mean score of 2.50 and above indicates agreement, while a mean score below 2.50 indicates disagreement.

Data Analysis and Discussion

This section of the paper examined data analysis and discussion of findings. A total of 399 research copies of instrument were distributed, on 386 were correctly filled and retrieved and used for that data analysis.

Table 1:Mean score on residents Exposure to Targeted Social Media Advertising

S/N	ITEMS	SA	A	D	SD	Mean	Decision
1	I often see adverts about solar power on my social media accounts	121	138	69	58	2.83	Accepted
2	Solar power adverts appear frequently on my Facebook or Instagram page	113	146	71	56	2.82	Accepted
3	I receive sponsored or paid adverts about solar energy online	109	133	82	62	2.75	Accepted
4	Solar adverts I see online are related to my interests or needs	97	141	88	60	2.71	Accepted
5	I come across solar power adverts when browsing social media	118	129	76	63	2.78	Accepted
6	I notice repeated solar power adverts on different social media platforms	104	137	79	66	2.72	Accepted
7	I spend enough time on social media to see solar adverts regularly	126	132	68	60	2.84	Accepted

The analysis indicates that residents of Obio/Akpo Local Government Area experience a moderate to high level of exposure to targeted social media advertising on solar power. All the items recorded mean scores above the decision benchmark of 2.50, which implies general agreement among respondents.

Table 2: mean scores on the Influence on Awareness of Solar Power and adoption by Residents in Obio/Akpo Local Government Area

S/N	Items	SA	A	D	SD	Mean	Decision
8	Social media adverts have increased my knowledge of solar power	116	142	73	55	2.83	Accepted
9	I learned about the benefits of solar energy through online adverts	109	148	74	55	2.81	Accepted
10	Advertisements online explain how solar systems work	101	139	86	60	2.73	Accepted
11	I am more aware of solar products because of social media adverts	118	133	79	56	2.81	Accepted
12	Social media adverts provide useful information about solar installation	97	144	87	58	2.72	Accepted
13	I now understand the cost of solar systems through online adverts	92	131	96	67	2.64	Accepted
14	Targeted adverts have made me aware of where to buy solar products	105	136	83	62	2.74	Accepted

The result shows that targeted social media advertising has a positive influence on residents' awareness of solar power in Obio/Akpo Local Government Area. All the items recorded mean scores above the benchmark of 2.50, indicating that respondents generally agree that social media adverts contribute to their knowledge and understanding of solar energy.

Table 3: Mean score on the Effect on Attitudes Residents toward Solar Power Adoption

S/N	Items	SA	A	D	SD	Mean	Decision
15	Social media adverts make solar power look attractive to me	128	149	57	52	2.91	Accepted
16	I feel positive about using solar energy after seeing online adverts	122	141	66	57	2.85	Accepted
17	Advertisements online encourage me to consider solar power	134	147	61	44	3.02	Accepted
18	I believe solar power is a good alternative to fuel and generator because of adverts I see	139	150	49	48	3.20	Accepted
19	Social media adverts increase my interest in the use of solar energy	117	145	70	54	2.84	Accepted
20	I am willing to adopt solar power due to online advertising	79	108	104	95	2.44	Rejected
21	I trust the information about solar power shared in social media adverts	83	119	97	87	2.51	Accepted

The findings indicate that targeted social media advertising exerts a moderate but meaningful influence on residents' attitudes toward solar power adoption in Obio/Akpo Local Government Area. Most of the items recorded mean scores above the acceptance threshold, suggesting that advertising contributes positively to how residents perceive solar energy.

Discussion of Findings

The findings revealed that residents of Obio/Akpo Local Government Area experience a moderate to high level of exposure to targeted social media advertising on solar power. The uniformity of mean scores above the acceptance benchmark of 2.50 indicates that exposure is not incidental but rather systematic and recurrent across different social media platforms. This is an indication that solar energy firms and marketers are actively leveraging digital driven advertising tools such as behavioural targeting, interest profiling, and sponsored content placement to ensure visibility of solar products among potential consumers.

The implication of this finding is that social media platforms have become effective spaces for renewable energy marketing. Residents frequently encounter solar advertisements while engaging in routine online activities, which aligns with the logic of digital advertising and marketing where visibility is ignited through user data tracking and engagement analytics. In what it may look like, variation in responses also suggests uneven personalization. While some users receive highly tailored advertisements based on browsing behaviour, others encounter more generic promotional content, indicating differences in algorithmic precision or data availability.

This finding is consistent with the study of Duffett (2017), who examined social media marketing communication and consumer engagement in South Africa. Duffett found that increased exposure to targeted social media advertisements significantly enhances product visibility and consumer familiarity, particularly in technology related products. The study emphasized that algorithm driven exposure is central to modern advertising effectiveness.

On the second research question on the influence of digital advertising on the solar adoption among residents of Obio/Akpo, the result revealed that targeted social media advertising has a positive influence on residents' awareness of solar power in Obio/Akpo Local Government Area. The consistent mean scores above 2.50 on this analysis demonstrated that respondents generally agree that social media platforms serve as important channels for acquiring knowledge about solar energy. This indicates that advertising is not limited to persuasion alone but also performs an educational function.

Residents reported improved awareness of solar energy benefits such as sustainability, energy independence, and environmental protection. This shows that targeted advertisements are effective in simplifying technical concepts and presenting them in user friendly formats such as videos, infographics, and sponsored posts. Consequently, social media becomes a secondary information system complementing traditional awareness channels like television and interpersonal communication.

However, the lower mean score related to cost awareness highlights a critical gap in informational depth. While general awareness is strong, detailed understanding of pricing structures, installation costs, and maintenance requirements remains insufficient. This suggests that advertisers prioritize promotional appeal over comprehensive consumer education, which may limit informed decision making. This finding aligns with the work of Kaplan and Haenlein (2010), who explained that social media platforms function as hybrid communication environments that combine information dissemination with interaction. They argued that social media significantly enhances consumer awareness but may also lead to selective information exposure depending on content design.

The findings on the last table indicate that targeted social media advertising has a moderate but meaningful influence on residents' attitudes toward solar power adoption. The majority of mean scores above the acceptance threshold suggest that exposure to solar advertisements positively shapes perceptions, making residents more receptive to solar energy as a viable alternative power source.

The analysis shows that many respondents now perceive solar energy as environmentally friendly, economically beneficial in the long term, and technologically reliable. This demonstrates the persuasive capacity of targeted messaging in framing solar energy within positive evaluative contexts. Advertising content that emphasizes sustainability and cost savings appears particularly effective in shaping favourable attitudes.

However, despite these positive perceptions, willingness to adopt solar power was rejected as a strong outcome. This reveals a clear gap between attitude formation and behavioural intention. Economic constraints, installation costs, and

infrastructural concerns may explain why favourable attitudes do not automatically translate into adoption behaviour. Additionally, the marginal trust placed in advertisements indicates skepticism regarding promotional claims, which may weaken behavioural conversion.

This outcome is consistent with Ajzen's Theory of Planned Behaviour (1991), which posits that attitudes alone are insufficient predictors of behaviour; behavioural intention is also influenced by perceived behavioural control and subjective norms. In this case, even when attitudes are positive, financial and structural barriers may prevent actual adoption.

Recommendations

Based on the finding of the study, the following recommendations were made:

1. Based on the findings of the study, it was recommended that solar energy marketers should intensify and sustain targeted social media advertising strategies in order to maintain high levels of exposure among residents and reinforce continuous engagement with solar power messages.
2. Based on the findings of the study, it was recommended that advertisers should improve the quality and depth of information provided in social media campaigns by including clear details on cost, installation processes, and long term benefits to enhance residents' awareness and understanding of solar power.
3. Based on the findings of the study, it was recommended that government agencies and energy stakeholders should introduce supportive measures such as financial incentives, flexible payment options, and public sensitization programmes to bridge the gap between positive attitudes and actual adoption of solar power among households.

Conclusion

The study established that residents of Obio/Akpo Local Government Area are exposed to targeted social media advertising on solar power at a moderate to high level. The findings from the first research question revealed that solar related adverts frequently appear across social media platforms used by residents. This consistent exposure indicates that advertisers are effectively utilizing digital targeting tools to reach potential consumers. Such visibility creates an enabling

environment for information dissemination and sets the stage for influencing energy related decisions at the household level.

References

Ankur, G., Sanjeev, S., & Kamal, U. (2025) The influence of marketing and awareness campaigns on solar energy adoption: A Review of Strategies and Effectiveness. *International Research Journal of Multidisciplinary Scope 6(3):1316-1332*

Abbasi, M. (2025). *Fundamentals of targeted advertising in social media*. https://theamericanjournals.com/index.php/tajet/article/view/5954

Ajay et al (2024) titled Review on intelligent social networking algorithms and their effects on predicting the adequacy of renewable energy sources via social media. *International Journal of Smart Technologies for Power and Renewable Energy.* 3(4)23-45

Apajalahti, E.L, Lovio, R. &Heiskanen, E. (2015). From demand side management (DSM) to energy efficiency services: A Finnish case study. *Energy Policy, 81, (3) 76–85.*

Armstrong, M. (2003). A Handbook of Human Resources Management Practice, (8th ed). The Bath Press Ltd.

Bashar, A., Wasiq, M., Nyagadza, B., & Maziriri, E. (2024). Emerging trends in social media marketing. https://fbj.springeropen.com/articles/10.1186/s43093-024-00308-6

Eric, U., Dan, T., & McAdams A. (2026). Evaluating social media user trade-off between free platform use and privacy concerns of AI-powered targeted advertising. *Journal of Social Network. Analysis and Mining*. 16 (26)2-15. https://doi.org/10.1007/s13278- 025-01518-8

Kimbell, J. (2024). *The impact of targeted advertising on social media users* https://www.grin.com/document/1511726

Li, W., et al. (2024). Determinants of solar photovoltaic adoption intention. https://www.mdpi.com/2071-1050/16/18/8204

Lund, P.D. (2011). Boosting new renewable technologies towards grid parity economic and policy aspects. *Renew Energy, 36, (15) 2776–2784*

Tong, W. (2025). Impact of social media on targeted marketing. https://aemps.ewapub.com/article/view/29283

Uwayezu, E., Tenney, D., & McAdams, A. (2026). AI powered targeted advertising and user perception. https://link.springer.com/10.1007/s13278-025-01518-8

Shakeel, S. R., et al. (2023). Solar PV adoption at household level. https://www.sciencedirect.com/science/article/pii/S2211467X23001281

Karasmanaki, E., et al. (2025). Factors leading to residential photovoltaic adoption. https://www.mdpi.com/1996-1073/18/8/2071

Oliva, E. J. D., & Santamaria, R. A. (2025). Solar adoption in developing countries. https://www.mdpi.com/2071-1050/17/12/5494